

**REMARKS**

Claims 1-27, 37 and 39 remain pending in the application, with claims 1, 37 and 39 being the independent claims. Reconsideration and further examination are respectfully requested.

In the Office Action, claims 1-27 were rejected under 35 USC § 101 because they allegedly “lack any recitation of technology in the body of the claims, which is required in order to meet the statutory requirements.” While Applicants believe that the case law does not provide any separate “lack of technology” basis for rejecting under § 101 (i.e., the applicable case law uses the terms “technology” and “usefulness” interchangeably), Applicants nevertheless have amended the subject claims as indicated in the Office Action in order to obtain early allowance of this case.

After carefully reviewing the case law cited in the Office Action, it appears that the only potential ground for the present § 101 rejection is that certain of the previous claim limitations could have been construed to include mental steps, which allegedly would have been improper. In order to overcome this potential objection, the subject claims have been amended above to recite the use of a computer to execute steps that previously were recited as direct method steps. The present recitation of a computer is intended only to exclude from the scope of such claims any method where the subject steps are performed mentally, and is not intended to limit the claims to any particular type of computer (e.g., electronic, optical, biological, chemical, etc.), whether now existing or hereafter developed.

By requiring the indicated steps to be performed by a computer, the above claim amendments are believed to eliminate any argument that the present claims do not

recite statutory subject matter. That is, the subject claims now recite a method utilizing a computer which, by any definition, must fall within the technological arts. Accordingly, withdrawal of the present § 101 rejection is respectfully requested.

In the Office Action, claims 1-9, 12-18, 21-26, 37 and 39 were rejected under 35 USC § 103(a) over U.S. Patent 6,125,355 (Bekaert) in view of a portion of a text titled "Forecasting – Methods and Applications" by Spyros Makridakis et al. (Makridakis); claim 10 was rejected under § 103(a) over Bekaert in view of Makridakis and U.S. Patent 6,405,179 (Rebane); claim 11 was rejected under § 103(a) over Bekaert in view of Makridakis and U.S. Patent 6,144,945 (Garg); and claim 27 was rejected under § 103(a) over Bekaert in view of Makridakis and U.S. Patent 6,532,449 (Goertzel). Withdrawal of these rejections is respectfully requested for the following reasons.

The present invention concerns systems, methods and techniques for estimating the future tendency of the value of an asset to change (e.g., price sensitivities or elasticities; see page 12, lines 10-15 of the Specification) based on a change in one or more exogenous variables. For example, the techniques of the present invention might be utilized to project future price sensitivities or elasticities based on predictions for such exogenous variables. Allowing one to predict, e.g., the future price sensitivity of a particular asset to fluctuations in other measures and variables often can permit better management of, and/or accounting for, specified types of risk (e.g., risk based on interest-rate fluctuations).

Initially, historical data for the value of an asset is processed together with historical data values for several exogenous variables to obtain a formula for calculating a measure of a tendency of the asset value to change as a result of changes in the data

values for the exogenous variables (e.g., a price sensitivity or price elasticity formula), where such formula is a function of such exogenous variables. Projected data values are obtained for the exogenous variables, and a measure of the tendency of the asset value to change based on a change in at least one of the exogenous variables is estimated using the obtained formula and the input projected data values.

The claims have been amended above to clarify that the asset can be purchased by an owner and its value (whose tendency to change is estimated in the present invention) fluctuates without further investment by the owner. This concept is what the Specification was intended to encompass, as the Specification speaks about assets such as stocks, bonds and shares in a commodity index that can be purchased and that have a value that fluctuates based upon a variety of market factors, rather than based upon additional investments made by the owner of the asset.

Thus, independent claims 1, 37 and 39 are directed to evaluation of an asset. Initially, historical data for the value of an asset and historical data values for plural exogenous variables are processed to obtain a formula for calculating a measure of a tendency of the value of the asset to change as a result of changes in the data values for the exogenous variables, the formula being a function of the exogenous variables. Projected data values for the exogenous variables are obtained, and a measure of the tendency of the value of the asset to change based on a change in at least one of the exogenous variables is estimated using the obtained formula and the input projected data values. According to the present claims, the asset can be purchased by an owner and the value of the asset, whose tendency to change is estimated in the present invention, fluctuates without further investment by the owner.

The foregoing combination of features is not disclosed or suggested by the applied art. In particular, the applied art does not disclose or suggest at least the feature of estimating a measure of the tendency of the value of an asset to change based on a change in at least one of plural exogenous variables, using an obtained formula and projected data values for the exogenous variables, where the formula has been obtained based on historical data for the value of an asset and historical data values for the exogenous variables, and where the asset can be purchased by an owner and the value of the asset, whose tendency to change is estimated in the present invention, fluctuates without further investment by the owner.

Bekaert, the primary reference relied upon in the Office Action, concerns asset pricing and is not seen to say anything at all about estimating a measure (e.g., price sensitivity or price elasticity) of the tendency of a value of an asset to change based on changes in one or more exogenous variables. As a result, Bekaert could not have disclosed or suggested processing historical asset value data and historical data values for plural exogenous variables to obtain a formula for calculating a measure of a tendency of the value of the asset to change as a result of changes in the data values for the exogenous variables, with the formula being a function of the exogenous variables.

In response to similar remarks made by Applicants in previous communications, the Office Action states as follows:

Factor analysis (not described by Bekaert in detail) uses a set of exogenous variables (known as factors) and the dependent variable as input, estimates a multivariate relationship between the dependent variable and exogenous variables (which involves a formula) and uses this

relationship and the projected values (or estimated values) of the exogenous variables to estimate the dependent variable.

The foregoing remarks apparently are intended to support an assertion that Bekaert inherently discloses the feature of estimating a measure of the tendency of the value of the asset to change based on a change in at least one of the exogenous variables as presently recited. However, as noted above, Bekaert primarily concerns asset pricing and is not seen to say anything at all about estimating a measure (e.g., price sensitivity or price elasticity) of the tendency of a value of an asset to change based on changes in one or more exogenous variables. The Office Action provides no indication as to how Bekaert would have provided motivation to use the described factor analysis in the manner recited in the present claims.

As discussed in more detail in the following paragraphs, lacking any suggestion in this regard, Bekaert plainly could not have suggested the inventive features of the present claims. For example, the specific features mentioned above directly utilize the basic concept of estimating a measure of the tendency of a value of an asset to change, and extend that concept in a novel way.

For the most part, the specific portions of Bekaert that have been cited in the Office Action in this regard are completely unrelated to the general concept of estimating a measure of the tendency of a value of an asset to change based on changes in one or more exogenous variables. For instance, column 1 lines 9-20 of Bekaert only appears to discuss pricing modules; column 2 lines 29-30 only mentions arbitrage-free pricing; column 3 line 47 to column 4 line 30 generally discusses Bekaert's pricing module; and column 4 lines 60-62 simply notes that factor analysis is well-known in the art; column 6 lines 24-26 mentions the state variables for Bekaert's

pricing module, none of which having any apparent relationship to the present feature of the invention; column 8 lines 1-3 simply refers to projection of inflation values; and claim 14 merely notes that in the claimed technique the estimated real rate of interest is determined based on a short-term nominal rate of interest and a value of inflation is based on expected inflation and the nominal short-term rate of interest.

Column 4 lines 27-30 of Bekaert apparently is the only portion of Bekaert to even mention price sensitivity or, for that matter, any related concept. However, that portion of Bekaert does not refer to any of Bekaert's own processing, but rather is simply identifying one of the input parameters to Bekaert's pricing module. This conclusion is inescapable when one reads lines 24-27 together with lines 27-30.

It is further noted that neither this very brief cited portion of Bekaert, nor any other portion of Bekaert, says anything about a formula for calculating a measure of a tendency of the value of an asset to change as a result of changes in the data values for the exogenous variables, where the formula is a function of the exogenous variables, as recited in the present claims. As a result, Bekaert could not possibly disclose or suggest anything about obtaining projected data values for such exogenous variables or using such projected data values to estimate a measure of the tendency of the value of an asset to change.

The Office Action simply asserts that generation of such a formula is inherent in Bekaert's pricing module, stating:

The input variables of the pricing module are interpreted to include historical data values and estimated prices include the step of estimating a formula for calculating a measure of a tendency of the value of the asset to change as a result of changes in the data values for the exogenous variables. Bekaert inherently teaches the step of estimating a measure of

the tendency of the value of the asset to change based on a change in at least one of the exogenous variables using the formula obtained in step (a) and the projected data values input in step (b).

While Applicants agree that the inputs to Bekaert's pricing module are historical data values for certain economic variables, this aspect of Bekaert is believed to have little to do with the present invention. Moreover, as noted above, Applicants are unable to find anything in Bekaert that discloses or suggests obtaining a formula for estimating a price sensitivity, price elasticity or any other measure of the tendency of the value of an asset to change based on changes in one or more exogenous variables.

In short, it appears that the Office Action is asserting that most, if not all, of the limitations of the present claims are inherent in Bekaert. In this regard, it has been held that:

To establish inherency, the *extrinsic evidence* [emphasis added] "must make clear that the missing descriptive matter is *necessarily present* [emphasis added] in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1268, 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991). 'Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' *Id.* at 1269, 20 U.S.P.Q.2d at 1749 (quoting In re Oelrich, 666 F.2d 578, 581, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981)).

In re Robertson, (Fed. Cir. 1999) 169 F.3d 743, 745; 49 U.S.P.Q.2d 1949.

Applicants are unable to find anything in the applied art references to establish that the above-referenced features necessarily are present in Bekaert. In this regard, the Office Action has not even attempted to explain how such features would have been inherent, but instead only includes the general language discussed above.

Furthermore, according to the present claims, historical data values for plural exogenous variables are used to obtain the formula (which itself is a function of the

exogenous variables), and then projected data values for the exogenous variables are used in connection with the obtained formula to estimate a measure of the tendency of the value of the subject asset to change. Bekaert, on the other hand, apparently only uses historical data values for certain economic variables in order to generate estimates of current asset prices. In Bekaert, there appears to be no step of obtaining projected values for such economic variables and then using such projected data values in any manner similar to the presently recited technique.

The Office Action argues, in the alternative, that a combination of Bekaert and Makridakis would have rendered the present claims obvious. In this regard, pp. 241-260 of Makridakis discusses multiple regression and provides an example in which multiple regression is used to forecast net changes in aggregate end-of-month bank account balances (due to aggregate deposits and withdrawals throughout the month). Even assuming that the aggregate of bank account balances within a particular geographic region could have been deemed to be an "asset", as previously recited in the claims (and Applicants do not believe it could), the above claim amendments clearly distinguish such a use of multiple regression from the present invention.

More specifically, the above amendments clarify that the asset can be purchased by an owner and that the recited value of the asset, whose tendency to change is estimated in the present invention, fluctuates without further investment by the owner. The example cited in Makridakis is concerned with predicting the net cash flow into and out of bank accounts (i.e., the aggregate behavior of depositors), and certainly has nothing to do with predicting the tendency of the value of an asset to change, as clarified above.



Thus, neither Bekaert, Makridakis nor any combination of the two would have disclosed or suggested this feature of the invention. For this reason alone, the present claims cannot be said to have been obvious in view of any permissible combination of Bekaert and Makridakis.

Moreover, it is noted that there is absolutely no motivation to modify Bekaert based on any of the teachings of Makridakis. There simply is no suggestion to incorporate multiple regression into Bekaert's technique. Apparently the only mention of regression in Bekaert is at column 12, lines 62-65, which merely mentions the possibility of calculating a price-dividend ratio by a summation of polynomial terms of certain state variables using linear regression. Bekaert does not appear to say anything about regressing asset price against his input economic variables for any purpose whatsoever and there is no teaching that modifying Bekaert to use multiple regression would be desirable.

With regard to motivation to combine prior art teachings, the Federal Circuit has held as follows:

"This factual question of motivation is material to patentability, and could not be resolved on subjective belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher." [citation omitted]

In re Lee, 277 F.3d 1338, 1343-44 (2002)

"In its decision on [the subject] patent application, the Board rejected the need for "any specific hint or suggestion in a particular reference" to support the combination of the [applied art] references. 'Omission of [such] a relevant factor required by precedent is both legal error and arbitrary agency action.'"

*Id.* at 1344.

In short, the teachings of Bekaert and Makridakis would have to be substantially supplemented and modified in order to achieve the present invention. The only motivation to do so would have to be based on Applicants' own disclosure, which of course is impermissible hindsight.

Here, no reference has been cited that would suggest incorporating the use of multiple regression in any manner whatsoever into Bekaert's pricing modules, much less in any manner that would have resulted in the present invention. Moreover, as noted above, even if such references were to be combined, they still would lack significant limitations of the present claims.

Based on the foregoing remarks, independent claims 1, 37 and 39 are believed to be allowable over the applied art. The other claims in the application depend from these independent claims and are therefore believed to be allowable for at least the same reasons. In addition, each such dependent claim recites an additional feature of the invention that further distinguishes the invention from the applied art. Accordingly, the individual reconsideration of each on its own merits is respectfully requested.

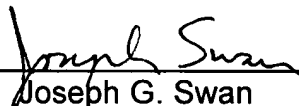
In view of the foregoing remarks, the entire application is believed to be in condition for allowance, and an indication to that effect is respectfully requested.

If there are any fees due in connection with the filing of this paper that have not been accounted for in this paper or the accompanying papers, please charge the fees to our Deposit Account No. 13-3735. If an extension of time under 37 C.F.R. 1.136 is required for the filing of this paper and is not accounted for in this paper or the accompanying papers, such an extension is requested and the fee (or any underpayment thereof) should also be charged to our Deposit Account No. 13-3735. A duplicate copy of this page is enclosed for that purpose.

Respectfully submitted,

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Dated: August 6, 2004

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